

Date: Monday, 27/04/2009 7:32:37 AM
User: Chantal Lavoie

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : ROUND BILLET 17-4
Job Number : 47478	
Estimate Number : 10040	
P.O. Number :	Part Number : D6104005
This Issue : 27/04/2009 S.O. No. :	Drawing Number : D6104 REV B
Prsht Rev. : NC	Project Number : N/A
First Issue : / / Type : PURCHASED PARTS	Drawing Revision : B
Previous Run : 47096	Material :
Written By :	Due Date : 08/05/2009 Qty: 20 Um: Each
Checked & Approved By : <u>C 20/09/104/27</u>	
Comment : Est. A: 01.05.08 New Issue EC	

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	PG	PURCHASING
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Comment: PURCHASING

Issue P/O: 8050

C 20/09/104/27

a) Description: S.S round billet

b) Ø4.00" x 5.10" long

c) Tolerance on all dimensions are +0.030"/-0.000"

d) Material: 17-4PH Stainless steel (Ams 5643 or Aisi 630)

e) One blank makes 2 parts

f) Material certification required

(10) (20)

2.0	D6104005P	17-4 SS Roundbar 4.00"OD
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Comment: Qty.: 1.0000 Each(s)/Unit Total: 10.0000 Each(s)
17-4 SS Roundbar 4.00"OD

3.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure material certification is attached

C 20/09/104/27

4.0	QC6	DIMENSIONAL CHECK
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Comment: DIMENSIONAL CHECK

Ensure Material certification comply to Dwg D6104

C 20/09/104/27

(20)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Monday, 27/04/2009 7:32:38 AM
User: Chantal Lavoie

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: ROUND BILLET 17-4

Job Number: 47478

Part Number: D6104005

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: _____

9/10/8 (20)

6.0

QC21

FINAL INSPECTION/W/O RELEASE



09/05/11

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



MF 09-05-10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

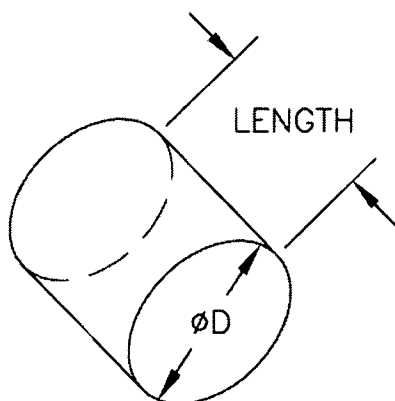
NOTE: Date & initial all entries



DESIGN 27	DRAWN BY 	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED 	APPROVED 	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED
02.11.29

SPECIFICATION CONTROL DRAWING



MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRc)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

W/O: 47478

ALL DIMENSIONS ARE IN INCHES

CZ 09/04/27

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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**Castle Metals®**

A. M. Castle & Co.

BORDEREAU DE MARCHANDISES

Page 1 of 1

No de Formulaire d'Emballage / Pack Slip N°:37432

Expédié de / Ship From: Castle Metals Montreal 835-Selkirk Avenue Pointe Claire, QUEBEC H9R 3S2		Vendu à / Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7		Expédié à / Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7		Livré à / Deliver To:	
Date d'expédition / Date Shipped	F.O.B.	Modalités de transport / Freight Terms		Transporteur / Carrier	N° du Bon de connaissance / BOL No	N° de livraison / Delivery No	
06-MAY-09	ORIGIN	Prepaid		Manitoulin	36108	2508866	

Détails d'expédition / Shipment Details	Destination finale / Final Destination Branch -
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N° de commande / Order No	N° de ligne / Line No	N° d'article / Item No	Description			
192409	2	14996.MO	4.0000.RD.17CR-4NI.STAINLESS.CF.SOL TR.COND A-132.0000-156.0000 CUT TO 5.1 IN ()			
N° de bon de commande / Purchase Order No	Nbre de pièces / Part Number		Qté commandée / Ordered Qty	Qté Facturée / Invoice Qty	Solde à livrer / Backorder Qty	
8650			10 PCS	10 PCS		
Détails / Details						
Usine / Mill	No de coulee / Heat Number	Code mec / Mech Id	Pièces / PCS	Largeur (Pouce) / Width (IN)	Longueur (Pouce) / Length (IN)	Qté expédiée / Shipped Qty (LBS)
	A10191		10			181.62

Ces marchandises/technologies sont sujettes aux règlements de l'Export Administration et du département d'Etat des États-Unis. Si elles ont été/sont exportées, elles doivent se conformer à ces règlements. Toute modification du contrat de transport contraire aux lois des États-Unis est interdite.
These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

Nous certifions par la présente que le matériel couvert par cette certification est conforme aux spécifications susmentionnées et aux exigences applicables pour le matériel, y compris toute spécification faisant partie de la description. Les rapports d'essai sont archivés pour fins de consultation. Toute requête concernant du matériel défectueux sera rejetée à moins qu'elle ne soit faite par écrit à A. M. Castle & Co. dans les 60 jours suivant la livraison. Le matériel coupé sur mesure ou coupé par le client ne peut être retourné pour crédit.
We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Ce matériel a été reçu et inspecté par This material has been received and inspected by:	Date:
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P.O. BOX 977
SYRACUSE
NEW YORK 13201

CERTIFICATE OF TEST

A M CASTLE, INC		S A M CASTLE, INC		OUR ORDER NO. P5-11275-B-02	
3400 N WOLF RD FRANKLIN PARK, IL 60131		26800 MILES RD BEDFORD HEIGHTS, OH 44146		DATE 08/19/08	

CUSTOMER ORDER # & DATE 10-37736	CUSTOMER REQ. #	DISTRICT B PARSONS	SHIPPED FROM SYRACUSE
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DESCRIPTION OF MATERIAL
CRU 17-4PH RTA IAC 42164 14996
AHC-3174-31 REV 7 AMS-5643R ASTM-A564-04 TYPE 630 ASME-SA564-07ED T630
UNS-S17400 AMS-2303E
DFARS 252.225-7014 ALT 1

Info 08/05/08

HEAT NO.	CHEMICAL ANALYSIS										
A10191	C	MN	P	S	SI	NI	CR	MO	CU	CB	TA
	.046	.50	.030	.021	.61	4.20	15.19	.13	3.23	.29	.009

CASTLE METALS CORP
DATE RCVD 8/19/08
IAC 14996
APPROVED BY *W*

QUANTITY	HEAT NO.	MECHANICAL PROPERTIES				
4586 #	A10191	TENSILE PSI	YLD.2XPSI	XE LONG4D	RED/AREA%	HARDNESS BHN 343
		206,960	175,260	12.9	55.3	BHN 415

MACRO TEST OK
MICRO TEST OK
FERRITE 3 %
MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 1 HOUR AT TEMPERATURE --
AIRCOOLED.
MAGNAFLUX F/S = 0/0
CRUCIBLE MATERIALS CORP. VENDOR #18610.
MATERIAL INGOT CAST.

NAFTA - YES
CORRECTED COPY - ORIGINAL CERT DTD 07/23/08
MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT THANK YOU FOR SELECTING A QUALITY PRODUCT
NO WELD REPAIR PERFORMED MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS WE
MATERIAL MELTED IN U.S.A.

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF , 20

NOTARY PUBLIC
JON PIKARSKY

CERTIFIED BY: *Jonathan Pikarsky*
QUALITY ASSURANCE REPRESENTATIVE
THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORDANCE WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THE SPECIFICATION REQUIREMENTS.
CRUCIBLE MATERIALS CORPORATION
ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

**Castle Metals®**

A. M. Castle & Co.

BORDEREAU DE MARCHANDISES

Page 1 of 1

No de Formulaire d'Emballage / Pack Slip No:37432

Expédié de / Ship From: Castle Metals Montreal 835-Selkirk Avenue Pointe Claire, QUEBEC H9R 3S2		Vendu à / Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7		Expédié à / Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7		Livré à / Deliver To:	
Date d'expédition / Date Shipped	F.O.B.	Modalités de transport / Freight Terms		Transporteur / Carrier	N° du Bon de connaissance / BOL No	N° de livraison / Delivery No	
06-MAY-09	ORIGIN	Prepaid		Manitoulin	36108	2508866	

Détails d'expédition / Shipment Details				Destination finale / Final Destination Branch -		
N° de commande / Order No	N° de ligne / Line No	N° d'article / Item No		Description		
192539	1	42464.MQ <i>01/05/09</i>		4.0000.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND A.132.0000-156.0000 CUT TO 5.1 IN ()		
N° de bon de commande / Purchase Order No		Nbre de pièces / Part Number		Qté commandée / Ordered Qty	Qté Facturée / Invoice Qty	Solde à livrer / Backorder Qty
8650				10 PCS	10 PCS	
Détails / Details						
Usine / Mill	No de coulee / Heat Number	Code mec / Mech Id	Pièces / PCS	Largeur (Pouce) / Width (IN)	Longueur (Pouce) / Length (IN)	Qté expédiée / Shipped Qty (LBS)
	A10562		10			187.29

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We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Ce matériel a été reçu et inspecté par
This material has been received and inspected by:

Date:

**Crucible
Specialty Metals**

 PO BOX 977
 SYRACUSE, NY 13201-0877

Certificate of Test

S O L D T O	A M CASTLE, INC 3400 N 2OLF RD FRANKLIN PARK, IL 60131	S H I P T O	A M CASTLE, INC 3400 N WOLD RD FRANKLIN PARK, IL 60131	OUR ORDER NO. P5-17384-8-01
				DATE 02/23/09
CUSTOMER ORDER NO 01-15099		CUSTOMER REQ NO		DISTRICT B PARSONS
				SHIPPED FROM SYRACUSE

DESCRIPTION OF MATERIAL

CRU 17-4PH RT A IAC 42464 *02/05/09* SIZE 4 RD
 AMC-3174-10 REV 8 ASME-SA564-07ED T630 ASTM-A564-04 T630 AMS-2303E
 AMS-5643R (EX SURFACE) /AISI 630 UNS# S17400
 DFARS 252.225-7014 ALT 1

HEAT NO.
CHEMICAL ANALYSIS

HEAT NO.	C	MN	P	S	SI	NI	CR	MO	CU	CB	TA
A10562	.040	.42	.030	.025	.51	4.17	15.29	.18	3.15	.28	.012

QUANTITY HEAT NO.
MECHANICAL PROPERTIES

2184 # A10562 TENSILE PSI YLD.2%PSI %ELONG4D RED/AREA% HARDNESS
 BHN 332
 CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOL:
 204,620 178,420 13.8 52.6 BHN 415

MACRO TEST OK

FERRITE 3 %

MAGNAFLUX F/S = 0/0

ELECTRIC FURNACE AOD MELTED

REDUCTION RATIO: 16.3:1

MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 1 HOUR

AT TEMPERATURE -

AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #18610.

MATERIAL INGOT CAST.

NAFTA - YES

CASTLE METALS CORP
 DATE RCVD *2/16/09*
 IAC *2/27/09*
 APPROVED BY *[Signature]*

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT, NO WELD REPAIR PERFORMED, AND MATERIAL MELTED IN U.S.A.

 THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED ACCORDANCE WITH ABOVE
 SPECIFICATIONS AND IS IN CONFORMANCE WITH THE SPECIFICATION REQUIREMENTS.
 CRUCIBLE MATERIALS CORPORATION ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

CERTIFIED BY

Dana Cusano